## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

Richard I. Masel et al.

us 03 2007 Senial No.:

10/578,055

UG 0 3 200 Spinal No.:

4911

July 27, 2006

For:

FORMIC ACID FUEL CELLS AND

**CATALYSTS** 

Art Unit:

1745

Examiner:

Unknown

1 hereby certify that this paper is being deposited with the United States Postal Service as FIRST-CLASS mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O.-Box 1450, Alexandria, VA 22313-1450, on this date.

July 31, 2007

Date

Attorney for Applicant(s) Registration No. 40,607

## INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Dear Sir:

This IDS is submitted under 37 C.F.R. §1.97(b) within any of the following time periods, whichever occurs last:

- (a) within three months of either the filing date of the application or the date of entry into the national stage; or
- (b) before the mailing date of First Office Action on the merits (i.e., not including actions such as restriction requirements); or
- (c) before the mailing of a First Office Action after the filing of a Request for Continuing Examination.

Applicant(s) submit herewith Form PTO-1449 (Information Disclosure Citation) together with copies of foreign patents, publications or other information of which applicant(s) are aware, which applicant(s) believe may be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 C.F.R. §1.56. Applicant(s) respectfully submit that the citation of any reference on Form PTO-1449 does not constitute an admission that the reference qualifies as prior art.

It is requested that the information disclosed on the enclosed Form PTO-1449 be made of record in this application.

Copies of the all cited references can be found in application Serial No. 10/817,361, filed April 2, 2004; application Serial No. 10/407,385 now U.S. Patent No. 7,132,188; and in application Serial No. 10/664,772; which the present applications claim priority on (see, 37 C.F.R. §1.98(d)) except for the following references: GB1292791 and GB1273045 and 6,485,851 which are provided herewith.

The Commissioner is hereby authorized to charge any additional fees which may be required to this application under 37 C.F.R.§§1.16-1.17, or to credit any overpayment, to Deposit Account No. 07-2069. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

GREER, BURNS & CRAIN, LTD.

Chicago, Illinois 60606 Telephone: (312) 360-0080

300 South Wacker Drive - Suite 2500

Facsimile: (312) 360-9315 Customer Number 24978

P:\DOC\$\1201\68586\BE4834.DOC

Thomas R. Fitzsimons, Reg. No, 40,607

Receipt date: 08/03/2007

10578055, GAU: 1795

Form PTO-1449 U.S. Department of Commerce Attorney Docket No.: 1201.68586 Serial No.: 10/578,055 Patent and Trademark Office (Rev. 8-88) Applicant: Richard I. Masel et al. INFORMATION DISCLOSURE CITATION (Use several sheets if necessary) Filing Date: May 2, 2006 Group: 1745 U.S. PATENT DOCUMENTS Examiner Filing Date Initial\* Document Number Date Name Class Subclass If Appropriate 6.020.083 02/01/2000 Breault et al. 6,146,782 11/14/2000 Wendt et al. 6,165,635 12/26/2000 Auer et al. 6.248.460 | 06/19/2001 Surampudi et al. 6,284,402 09/04/2001 Mallouk et al. 6.326.098 | 12/04/2001 Itoh et al. 6,387,557 05/14/2002 Krasij et al. 6,432,284 | 08/13/2002 Narayanan et al. 6,447,941 09/10/2002 Tomimatsu et al. 6,458,479 10/01/2002 Ren et al. 6,492,147 12/10/2002 Imamura et al. 6,492,052 12/10/2002 Ren 6.495.278 | 10/01/2002 Schmid et al. 6,498,121 12/24/2002 Gorer 6,517,965 02/11/2003 Gorer 6,533,827 | 04/19/2003 Cisar et al. 6,649,300 11/18/2003 Ito et al. 6,660,680 12/09/2003 Hampden-Smith et al. 6,670,301 12/30/2003 Adzic et al. 6,686,308 02/03/2004 Mao et al. 6,723,678 04/20/2004 Gorer 6.770.394 08/03/2004 Appleby et al. 6,924,055 08/02/2005 Hirsch et al. FOREIGN PATENT DOCUMENTS Translation **Document Number** Date Yes Country Class Subclass Nο OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Papageorgopoulos, D. et al.; "CO Tolerance of Pd Rich Platinum Paladium Carbon Supported Electrocatalysts fro PEMFC Applications", Journal of the Electrochemical Society, in press, August 2002, pp. 1-22. Adzic, R. et al.: "Structural Effects in Electrocatalysis", J. Electroanal, Chem., 1983, pp. 79-88. Avramov-lvic, M. et al.; "The electrocatalytic properties of the oxides of noble metals in the electrooxidation of methanol and formic acid", Electrochimica Acta, 2001, pp. 3175-3180 Baldauf, M. et al.; "Formic Acid Oxidation on Ultrathin Pd Films on Au(hkl) and Pt(hkl) Electrodes", J. Phys. Chem., 1996, pp. 11375-11381. Becerik, I. et al.; "Electro-oxidation of Formic Acid on Highly Dispersed Platinum and Perchlorate Doped Polypyrrole Electrodes", Journal of The Electrochemical Society, 2001, pp. D49-D54. Capon, A. et al.; "The Effect of Strong Acid on the Reactions of Hydrogen And Oxygen on the Noble Metals a Study Using Cyclic Voltammetry and a New Teflon Electrode Holder", Electroanalytical Chemistry and Interfacial Electrochemistry, 1972, pp. 275-286. /Moniaue Wills/ (01/22/2010) 01/22/2010 Date Considered Examiner \*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH!

10578055 - GAU: 1795

| Form PTO-1449 U.S. Department of Commerce                         |  |   |                                    | Attorney Docket No.: 1201.68586                  |                        | Serial No.: 10/578,055        |                  |               |  |  |  |  |  |
|---|--|---|------------------------------------|--|------------------------|-------------------------------|------------------|---------------|--|--|--|--|--|
| (Rev. 8-88  |  |   | Applicant: Richard I. Masel et al. |  |                        |                               |                  |               |  |  |  |  |  |
| INFORMATION DISCLOSURE CITATION (Use several sheets if necessary) |  |   |                                    | Filing Date: May 2, 2006                         | Group: 1745            |                               |                  |               |  |  |  |  |  |
| U.S. PATE   | ENT DOCUMENTS  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
| Examiner<br>Initial*  | Document Number  | Date  |                                    | Class  | Subclass               | Filing Date<br>If Appropriate |                  |               |  |  |  |  |  |
|   | 2004/0115518   | 06/17/2004  | Masel et al.                       |  |                        |                               |                  |               |  |  |  |  |  |
|   | 2003/0170508   | 09/11/2003  | Beckmann et                        |  |                        |                               |                  |               |  |  |  |  |  |
| FOREICN   | 6,485,851  | 11/26/2002  | Narayanan et al.                   |  |                        |                               |                  |               |  |  |  |  |  |
| FOREIGN PATENT DOCUMENTS  Translation                             |  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Document Number  | Date  | Country                            |  | Class                  | Subclass                      | Yes              | No            |  |  |  |  |  |
|   |  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   |  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | OT   | HER DOCUME  | NTS (Includin                      | g Author, Title, Date, Pertinent                 | Pages, E               | tc.)                          |                  |               |  |  |  |  |  |
|   | Capon, A. et al.; "The Oxidation of Formic Acid on Noble Metal Electrodes II. A Comparison Of the Behaviour of Pure Electrodes", <i>Electroanalytical Chemistry and Interfacial Electrochemistry</i> , 1973, pp. 239-254.  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Capon, A. et al.; "The Oxidation of Formic Acid on Noble Metal Electrodes III. Intermediates and Mechanism on Platinum Electrodes", <i>Electroanalytical Chemistry and Interfacial Electrochemistry</i> , 1973, pp. 205-231.   |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Capon, A. et al.; "The Oxidation of Formic Acid on Noble Metal Electrodes IV. Platinum and Palladium Electrodes",<br>Electroanalytical Chemistry and Interfacial Electrochemistry, 1975, pp. 285-305.  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Chi, N. et al.; "Electrocatalytic oxidation of formic acid by Pt/Co nanoparticles", Catalysis Letters Vol. 71, No. 1-2, 2001, pp. 21-26.   |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Clavilier, J. et al.; "Heterogeneous electrocatalysis on well defined platinum surfaces modified by controlled amounts of irreversibly absorbed adatoms", Part I: Formic Acid Oxidation on the Pt (III) –Bi system. <i>J. Electroanal. Chem.</i> , 1989, pp. 89-100.       |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Climent, V. et al.; "Electrocatalysis of formic acid and CO oxidation on antimony-modified Pt(111) electrodes",<br>Electrochimica Chemistry, 1993, pp. 1403-1414.  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | El-Shafei, A. et al.; "Electrocatalytic oxidation of formic acid on Pt binary and ternary electrodes in H <sub>3</sub> PO <sub>4</sub> ", <i>Journal of Electroanalytical Chemistry</i> , 1993, pp. 159-165.   |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | El-Shafei, A.; "Study of nickel upd at a polycrystalline Pt electrode and its influence on HCOOH oxidation in acidic and nearly neutral media", Journal of electroanalytical Chemistry, 1998, pp. 81-89.   |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Fernandez-Vega, A. et al.; "Heterogeneous electrocatalysis on well defined platinum surfaces modified by controlled amounts of irreversibly absorbed adatoms", Part II: Formic Acid Oxidation on the Pt (100) Sb system. <i>J. Electroanal. Chem.</i> , 1989, pp. 101-113. |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Gonzalez, M.J. et al.; "Electrocatalytic Oxidation of Small Carbohydrate Fuels at Pt-Sn Modified Electrodes", <i>J. Phys. Chem.</i> 1998, pp. 9881-9890.   |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Ha, S. et al.; "A miniatur   | e air breathing   | direct formic a                    | acid fuel cell", Journal of Power                | Sources                | , 2004, pp.                   | 119-124          |               |  |  |  |  |  |
|   | Ha, S. et al.; "Methanol conditioning for improved performance of formic acid fuel cells", <i>Journal of Power Sources</i> , 2002, pp. 655-659.  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Harmsen, J. et al.; "Kinetic modeling for wet air oxidation of formic acid on a carbon supported platinum catalyst",<br>Applied Catalysis, 1997, pp. 499-509.  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   |  | Hartung, T. et al.; "Catalytic Effects of Hg an Ti Submonolayers on the Electrooxidation of Formic Acid on Pt", J. Electroanal. Chem., 1986, pp. 135-149. |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Herrero, E. et al.; "Oxidation of formic acid on Pt(111) electrodes modified by irreversibly absorbed tellurium", Journal of Electroanalytical Chemistry, 1995, pp. 161-167.   |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Herrero, E. et al.; "Oxidation of formic acid on Pt(100) electrodes modified by irreversibly absorbed tellurium", <i>Journal of Electroanalytical Chemistry</i> , 1995, pp. 145-154.   |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
|   | Jiang, J. et al.; "Nanostructured platinum as an electrocatalyst for the electrooxidation of formic acid", <i>Journal of Electroanalytical Chemistry</i> , 2002, pp. 64-70.  |   |                                    |  |                        |                               |                  |               |  |  |  |  |  |
| Examiner  | /Monique Wills/  | (01/22/2010)  | Date                               | Considered 01                                    | /22/201                | 0                             |                  |               |  |  |  |  |  |
| *Examiner   | ALL REF  | tation consider   | <b>₽@ @64@</b>                     | r not citation is in conformance<br>神经的就是他们拥身和神经 | with MPE<br>of the for | P 609; Dra                    | w line th<br>HRO | rough<br>UGH. |  |  |  |  |  |

Sheet 4 of 6

| Form PTO-1449 U.S. Department of Commerce (Rev. 8-88) Patent and Trademark Office  INFORMATION DISCLOSURE CITATION (Use several sheets if necessary) |   |              |               | Attorney Docket No.: 1201.68586                                  |           | Serial No.: 10/578,055 |                               |       |  |  |  |  |
|--|---|--------------|---------------|--|-----------|------------------------|-------------------------------|-------|--|--|--|--|
|  |   |              |               | Applicant: Richard I. Masel et al.                               |           |                        |                               |       |  |  |  |  |
|  |   |              |               | Filing Date: May 2, 2006   |           | Group: 1745            |                               |       |  |  |  |  |
| U.S. PATE  | ENT DOCUMENTS   |              |               |  |           |                        | ·                             | . 1   |  |  |  |  |
| Examiner<br>Initial*   | Document Number   | Date         |               | Name   | Class     | Subclass               | Filing Date<br>If Appropriate |       |  |  |  |  |
|  |   |              |               |  |           |                        |                               |       |  |  |  |  |
| FORFICN  | DATENT DOCUMENTS  |              | L             |  |           | !                      |                               |       |  |  |  |  |
| FOREIGN PATENT DOCUMENTS   |   |              |               |  |           |                        |                               |       |  |  |  |  |
|  |   |              |               |  |           |                        | Translation                   |       |  |  |  |  |
|  | Document Number   | Date         | Country       |  | Class     | Subclass               | Yes                           | No    |  |  |  |  |
|  |   |              |               |  |           |                        |                               |       |  |  |  |  |
|  |   |              |               |  |           |                        |                               |       |  |  |  |  |
|  | OTHER   | DOCUMENTS    | (Including Au | ithor, Title, Date, Pertinent Pag                                | es, Etc.) |                        |                               |       |  |  |  |  |
|  | OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)  Beden, B. et al.; "Electrocatalytic Activity of Noble Metals for the Oxidation of Formate in Neutral Medium", J. Electroanal. Chem., 1979, pp. 127-131. |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Llorca, M. et al.; "Formic acid oxidation on Pd <sub>ad</sub> +Pt(100) and Pd <sub>ad</sub> + Pt(111) electrodes", <i>Journal of Electroanalytical Chemistry</i> , 1994, pp. 151-160.   |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Llorca, M. et al.; "Formic acid oxidation on Pt(111) electrodes modified by irreversibly absorbed selenium", Journal of electroanalytical Chemistry, 1994, pp. 217-225.   |              |               |  |           |                        |                               |       |  |  |  |  |
|  | McGovern, M. et al.; "Effects of Nafion as a binding agent for unsupported nanoparticle catalysts", Journal of Power Sources, 2003, pp. 35-39.  |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Shen, P. et al.; "Performance of CO-electrodeposited Pt-Ru/WO <sub>3</sub> electrodes for the electrooxidation of formic acid at room temperature", <i>Journal of Electroanalytical Chemistry</i> , 1995, pp. 223-225.          |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Waszczuk, P. et al.; "A nanoparticle catalyst with superior activity for electrooxidation of formic acid", <i>Electrochemistry</i> Communications, 2002, pp. 599-603  |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Rhee, Y. et al.; "Crossover of formic acid through Nafion® membranes", Journal of Power Sources, 2003, pp. 35-38.   |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Pron'kin, S. et al.; "Nanoparticle of Pt hydrosol immobilized on Au support: an approach to the study of structural effects in electrocatalysis", <i>Electrochimica Acta</i> , 2001, pp. 2343-2351.                             |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Rice, C. et al.; "Catalysts for direct formic acid fuel cells", <i>Journal of Power Sources</i> , 2003, pp. 229-235.  |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Rice, C. et al.; "Direct formic acid fuel cells", <i>Journal of Power Sources</i> , 2002, pp. 83-89.  Gasteiger`, H. et al.; "Electro-Oxidation of Small Organic Molecules on Well-Characterized Pt-Ru Alloys",                 |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Electrochimica Acta, Vol. 39, No. 11/12, 1994, pp. 1825-1832.   |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Smith, S. et al.; "Structural effects on the oxidation of HCOOH by bismuth modified Pt(111) electrodes with (110) manatomic steps", Journal of Electroanalytical Chemistry, 1999, pp. 43-49.                                    |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Shibata, M. et al.; "Electrocatalysis by Ad-Atoms", Part XXII: Shole Control By Ad-Atoms on HCOOH Oxidation. <i>J. Electroanal Chem.</i> , 1988, pp. 253-264.   |              |               |  |           |                        |                               |       |  |  |  |  |
|  | Chen, M. et al.; "Enhancement of the electrochemical oxidation of formic acid. Effects of anion absorption and variation of rotation rate", <i>Electrochimica Act</i> a, 2001, pp. 3481-3492.                                   |              |               |  |           |                        |                               |       |  |  |  |  |
| Examiner   | /Monique Wills/   | (01/22/2010) | ) Date        | e Considered   | 01/22/2   | 010                    |                               |       |  |  |  |  |
| *Examiner  | citati  |              | formance and  | r not citation is in conformance<br>not considered. Include copy |           |                        |                               | rough |  |  |  |  |

Receipt date: 08/03/2007 Attorney Docket No.: 1201.68586 Serial No.: 10/578,055 Form PTO-1449 U.S. Department of Commerce (Rev. 8-88) Patent and Trademark Office Applicant: Richard I. Masel et al. INFORMATION DISCLOSURE CITATION (Use several sheets if necessary) Filing Date: May 2, 2006 Group: 1745 **U.S. PATENT DOCUMENTS** Examiner Filing Date Initial\* **Document Number** If Appropriate Date Name Class Subclass FOREIGN PATENT DOCUMENTS Translation Subclass Yes No Document Number Date Class Country OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Beltowska-Brzezinska M. et al.; "The Influence of Upd-Lead on the Absorption of Formaldehyde, Formic Acid and Methanol on Pt In Acid Solution", Electrochimica Acta, Vol. 30, No. 11, 1985, pp. 1465-1471. Xia, X.; "New insights into the influence of upd Sn on the oxidation of formic acid on platinum in acidic solution", Electrochimica Acta, 1999, pp. 1057-1066. Xiang, J. et al.; "Investigation of the mechanism of the electrochemical oxidation of formic acid at a gold electrode in sulfuric acid solution", Journal of Electroanalytical Chemistry, 2001, pp. 95-100. Yang, Y. et al.; "Surface modification and electrocatalytic properties of Pt(100), Pt(110), Pt(320) an Pt(331) electrodes with Sb towards HCOOH oxidation", Electrochimica Acta, 2001, pp. 4339-4348. Sobkowski, J. et al.; "The Behaviour of Formic Acid on a Rhodium Electrode", J. Electroanal. Chem., 1978, pp. 309-320. Zhang, X. et al.; "Electrocatalytic Oxidation of Formic Acid on Ultrafine Palladium Particles Supported on a Glassy Carbon", Electrochimica Acta, Vol. 40, No. 12, 1995, pp. 1889-1897. M. Watanabe, "Electrocatalysis By Ad-Atoms, Part XIII. Preparation of Ad-Electrodes with Tin Ad-Atoms for Methanol Formaldehyde and Formic Acid Fuel Cells", J. Electroanal, Chem. 191, December 1985, p. 367-375. M. Watanabe, "Electrocatalysis By Ad-Atoms, Part XXIII. Design of Platinum Ad-Electrodes for Formic Acid Fuel Cells with Ad-Atoms of the IVth and the Vth Groups," J. Electroanal. Chem. 250, February 1988, p. 117-125. Zhu, Y. et al.; "High power density direct formic acid fuel cells", Journal of Power Sources, 2004, pp. 8-14. 01/22/2010 Examiner /Monigue Wills/ (01/22/2010) **Date Considered** \*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next

communication to applicant.

Receipt date: 08/03/2007

10578055 - GAU: 1795

Sheet <u>6</u> of <u>6</u> Form PTO-1449 U.S. Department of Commerce Attorney Docket No.: 1201.68586 Serial No.: 10/578,055 (Rev. 8-88) Patent and Trademark Office Applicant: Richard I. Masel et al. INFORMATION DISCLOSURE CITATION (Use several sheets if necessary) Filing Date: May 2, 2006 Group: 1745 U.S. PATENT DOCUMENTS Examiner Filing Date Initial\* **Document Number** Date Name Class Subclass If Appropriate FOREIGN PATENT DOCUMENTS Translation **Document Number** Date Country Class Subclass Yes No OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) A. Wieckowski and R. I. Masel, , "UHV and electrochemical studies of CO and methanol adsorbed at platinum/ruthenium surfaces, and reference to fuel cell catalysis," Electrochimica Acta 47, 22-23, 3637-3652 (2002). N. Markovic, H. Gasteiger, P. Ross, X. Jiang, I. Villegas and M. Weaver, "Electro-oxidation mechanisms of methanol and formic acid on Pt-Ru alloy surfaces," Electrochimica Acta, 40, 91-98, (1995). M. Arenz, V. Stamenkovic, T. J. Schmidt, K. Wandelt, P. N. Ross and N. M. Markovic, "The electro-oxidation of formic acid on Pt Pd single crystal bimetallic surfaces," Physical Chemistry Chemical Physics, 5, 4242, (2003). N. Watanabe, K. Iwatsu, A. Yamakata, T. Ohtani, J. Kubota, J. N. Kondo, A. Wada, K. Domen and C. Hirose, "SFG study of formic acid on a Pt(110)-(1x2) surface," Surf. Sci., 651, 357-358, (1996). S. W. Jorgensen and R. J. Madix,, "Active oxygen on Group VIII metals: activation of formic acid and formaldehyde on Pd(100)," J. Am. Chem. Soc., 110, 397, (1988). F. Solymosi and I. Kovacs, "Adsorption and reaction of HCOOH on K-promoted Pd(100) surfaces," Surf. Sci., 259, 95, (1991).C. Xu and D. W. Goodman, "Adsorption and Reaction of Formic Acid on a Pseudomorphic Palladium Monolayer on Mo(110)," J. Phys. Chem., 100, 245, (1996). R. R. Adzic, A.V. Tripkovic and N. M. Markovic, "Structural Effects in Electrocatalysis, Oxidation of Formic Acid and Oxygen Reduction on Single-Crystal Electrodes and the effects of Foreign Metal Adatoms," Electroanal. Chem., 150 79-88, (1983). Guo-Qiang Lu, Alechia Crown, and Andrzej Wieckowski, "Formic Acid Decomposition on Polycrystalline Platinum and Palladized Platinum Electrodes," J. Phys. Chem. B 1999, 103, pp. 9700-9711. Weber, M.; Wang, J.T.; Wasmus, S; Savinell, R.F.; "Formic Acid Oxidation in a Polymer Electrolyte Fuel Cell: A Real-Time Mass-Spectrometry Study," J. Electochem. Soc., 1996, 143(7), L158-I160. P. Waszczuk, J. Solla-Gullón, H.S. Kim, Y.Y. Tong, V. Montiel, A. Aldaz, and A. Wieckowski, "Methanol Electrooxidation on Platinum/Ruthenium Nanoparticle Catalysts," Journal of Catalysis 203, pp. 1-6 (2001). Gdowski, G.E.; Fai, J.A.; Maxid, R.J.; Reactive Scattering of Small Molecules from Platinum Crystal Surfaces: D2CO. CH<sub>3</sub>, CH<sub>3</sub>OH, HCOOH and the Nonanomalous Kinetics of Hydrogen Atom Recombination, Surf. Sci., 1983, 127(3) 541-54. Examiner **Date Considered** /Monique Wills/ (01/22/2010) 01/22/2010 \*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.